

REMARKS

Claims 1–7 are pending in the application. Claims 1 and 3–6 are amended herein. Reconsideration and reexamination of the pending claims are respectfully requested. No new matter is added by this Amendment.

Drawings

The Office objects to the drawings as failing to comply with 37 CFR § 1.84(p)(5). The Office indicates that the drawings do not include the following reference numeral mentioned in the description: 285 (page 6, lines 4 and 7). FIG. 2 has been amended. Applicants respectfully request that the drawing objection be withdrawn.

Specification

The Office objects to the specification due to informalities. The Office indicates that the status of the nonprovisional parent application should be included. Applicants have amended the Related Applications section to include the text “now U.S. Patent No. 6,616,573” after the filing date of the parent application. Applicants respectfully request that the objection to the specification be withdrawn.

Objection to the Claims

The Office objected to claims 5 and 6 due to informalities. Applicants have amended claims 5 and 6 to include the word “in” after the word “claimed.” Applicants respectfully request that the objection to claims 5 and 6 be withdrawn.

Claim Rejections – 35 U.S.C. § 112

Claim 4 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The Office indicated that the limitation “the key switch” has insufficient antecedent basis. Applicants have amended claim 4 to replace the word “key” with the word “first.” In light of the above amendment, it is respectfully requested that the rejection of claim 4 be withdrawn.

Claim Rejections - 35 U.S.C. § 102

Claims 1 and 2 are rejected under 35 U.S.C. § 102(a) as being anticipated by FIG. 1 of Applicants’ application. The Office states that the drawing discloses a schematic for starting an engine with a first switch 18 by turning the first switch to a starting position (run/accessory), energizing a second switch 148 using an electrical power source wherein the second switch is closed (run/accessory position connects battery terminal 126 to switch 132 which when closed

connects to 148), energizing a starter generator (from switch 148 to node 155 and to coil 160), the first switch already being in a run position, and charging the electrical power source using the starter generator (voltage regulator 172) controlling current from generator to battery.

Amended claim 1 is directed to a method of starting an engine with a first switch. The method may include, among other things, charging the electrical power source using the starter-generator, and blocking an inadvertent drainage of the electrical power source with a rectified circuit path coupling the starter-generator to the electrical power source when the starter-generator is stalled. FIG. 1 of the Applicants' application does not include a rectified circuit path that prevents inadvertent drainage of the electrical power source when the starter-generator is stalled. Thus, FIG. 1 of the Applicants' application does not teach or suggest "blocking an inadvertent drainage of the electrical power source with a rectified circuit path" as claimed in amended claim 1. Accordingly, claim 1 is allowable. Claim 2 depends from claim 1 and is allowable for at least the reasons claim 1 is allowable.

Claim Rejections – 35 U.S.C. § 103

Claims 3-7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over FIG. 1 in Applicants' application in view of U.S. Patent No. 4,161,684 ("Ragaly"). Specifically, the Office states that the FIG. 1 discloses a schematic for controlling a starter generator using a first switch 132 by providing a circuit path from a battery 112 to the first switch (when the switch is closed), providing a switched circuit path from a shifter (gearshift switch 152) to the first switch (by closing switches 132 and 152), energizing a second switch (148) by moving the first switch to a predetermined position (closing switch 132), providing current from the battery through the second switch to the starter generator (from switch 148 to node 155 to coil 160 to generator 162), de-energizing the second switch by moving the first switch to a second predetermined position (opening switch 132), de-energizing the second switch by opening the switched circuit path (opening switches 132 and 152), but FIG. 1 does not disclose a rectified circuit path from the generator to the battery.

According to the Office, Ragaly discloses a starter circuit including a first and a second switch (11, 13), a starter motor (17) to start an engine and an alternator (1) to charge a battery (4, 5), a voltage regulator (7) controlling voltage applied to the battery, and a rectifier circuit path (2, 3) coupled in a parallel circuit path to the first and second switch. Therefore, according to the Office, it would be obvious to one of ordinary skill in the art to modify FIG. 1 of Applicants' application with a rectifier circuit connected between the battery and the starter-generator in

view of Ragaly to prevent reverse current flow from the battery to the generator when the starter-generator is not operating.

To establish obviousness based on a combination of prior-art references, there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the Applicants, found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370, Fed. Cir. 2000. The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. *See id.*

The Ragaly reference discloses a circuit that simplifies the connection of a starter motor 17 to a 24V supply with a 12V on-board network. An auxiliary rectifier 3 and an auxiliary battery 5 are connected in parallel to the output of an automotive alternator 8. The starter relay switch contacts 13 are arranged such that, upon operation of the starter switch 13, the two batteries 4, 5 are connected in series and then to the starter motor 17. The supply connections 18 to the batteries 4, 5 are left undisturbed. The alternator 1 is configured to charge the batteries 4, 5 and is a three-phase alternator. (Col. 2, line 41). The three-phase alternator 1 has three armature windings that are star connected to a field winding 8. (Col. 2, lines 41 – 42). The output of the three-phase alternator 1 is, therefore, an alternating current/voltage. The alternating current/voltage is rectified in order to charge the batteries 4, 5. That is, the batteries 4, 5 cannot be charged by the three-phase alternator 1 without the rectifiers 2, 3. The rectifiers 2, 3 simply rectify the charging voltages out of the alternator from AC to DC.

However, the rectifiers 2, 3 do not block the battery drainage as asserted by the Office. Specifically, the circuit disclosed by the Ragaly reference has a separate alternator and starter. FIG. 1 shows that when “the key switch (such as switch 118) remains in the run/accessory power position, accessories can continue to draw power from the battery.” Page 3, lines 4-5. The same leakage also applies to the circuit disclosed by Ragaly. For example, as long as switch 11 is closed, the accessory 12 continues to drain current from the main battery 4 regardless of the positions of the switches 10, 13. Similarly, if switches 10, 13 of the circuit disclosed in Ragaly remain closed when the alternator 1 inadvertently stops, the starter 17 will also drain current from the batteries 4, 5.

Amended claim 3 is directed to a method of controlling a starter-generator using a first switch. The method may include, among other things, providing current from the battery through the second switch to the starter-generator, and blocking an inadvertent drainage of the

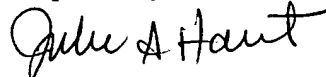
battery with a rectified circuit path which couples the starter-generator to the battery when the starter-generator is stalled. Ragaly does not teach or suggest a method that includes providing a starter-generator to start an engine and generating power to charge the electrical power source. Furthermore, Ragaly also does not teach or suggest a rectified circuit path that prevents inadvertent drainage of the electrical power source when the starter-generator is stalled. Thus, Ragaly does not teach or suggest the claimed invention. Accordingly, claim 3 is allowable. Claims 4-6 depend from claim 3, and consequently, include patentable subject matter for at least the reasons set forth above with respect to claim 3, and other reasons which for the sake of brevity are not discussed.

Amended claim 7 is directed to a method of controlling electrical power drainage of a starter-generator circuit. Among other things, the method includes providing a bypass rectifier for charging an electrical power source, and for blocking an inadvertent drainage of electrical power when the starter-generator is stalled. Independent claim 7 is allowable for at least the reasons set forth above with respect to claim 3.

CONCLUSION

In view of the above, entry of the amendment and allowance of pending claims 1-7 are respectfully requested. The undersigned is available for telephone consultation at any time during normal business hours.

Respectfully submitted,



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